

The Role of Energy Directives in Ensuring EU Energy Security and the Problems of Implementation in Ukrainian Legislation

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ABSTRACT

This article attempts to analyze the role of energy directives in ensuring energy security of the European Union, as well as the analysis of the current state of their implementation in the legislation of Ukraine in accordance with the Treaty establishing the Energy Community and the Association Agreement with the EU. The development of legal security of energy sphere in the EU from the Treaty of Paris on the European Coal and Steel Community to the fourth energy package, which allowed to provide the development of competition among producers and suppliers of energy resources, to provide equal access to the energy distribution and gas-distribution networks, to liberalize the energy sector and energy resources, to increase the use of green energy, to reduce emissions into the atmosphere, and to raise the level of energy security in Ukraine. In this article, authors have used the systematic approach and legal method analysis of the implementation process of EU Energy Directives in the Ukrainian legislation, in particular the Law "On Natural Gas Market", the Law "On Electricity Market", the Law "On Energy Efficiency", the Law "On Energy Land and Legal Regime of Special Zones of Energy Facilities", and the Energy Strategy of Ukraine till 2035 "Security, Energy Efficiency, Competitiveness".

Keywords: Energy security; EU energy directives; Energy packages; Energy legislation; Environmental security

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1. INTRODUCTION

Energy security of the State is a key factor in the development of the economy and the pledge to ensure normal conditions for society. However, today the level of energy security in Ukraine is far from optimal, as evidenced by the constant growth of tariffs for energy resources compared to the falling level of incomes of citizens, monopolization of the energy sector and significant dependence on imported energy resources (Hrabinsky and Krychkovsky, 2016). The Ukrainian energy sector is also weakened by the completion of the Nord Stream 2 gas pipeline, which will obviously reduce the volume of gas transit through the territory of Ukraine. In addition, the global fuel and energy crisis is gaining momentum, which has caused a global shortage of natural gas and a fivefold increase in its price in the fall of 2021. The global energy crisis is deepening. At first, there was not enough gas, and now there was not enough oil. This situation determines the need to improve energy efficiency and the search for new mechanisms to ensure energy security of the State. To date, among the energy import-dependent countries, this is best achieved by the EU members that pursue a common energy policy and are guided by imperative and binding energy directives (Khalova et al., 2018).

Ukraine, choosing the path of European integration, joined the energy community and signed the Association Agreement with the EU¹, undertook to implement a number of EU Directives² (Pavlyuk, 2016), in particular energy directives designed to improve energy and environmental security, to bring energy legislation and the energy sector itself closer to European standards, to create common energy markets. To date, Ukraine has implemented the second, and is in the process of implementation of the third, energy package, but the situation in the energy sector is not changing for the better, making it necessary to study its implementation. To this end, it is necessary to analyze the experience of legal provision of EU energy security, energy directives (Kulovesi and Muñoz, 2011) and peculiarities of its implementation in the domestic legal framework.

The goal of this article is an attempt to analyze the role of energy directives in ensuring energy security of the European Union, as well as to analyze the current state of its implementation in the legislation of Ukraine in accordance with the Treaty establishing the Energy Community and the Association Agreement with the EU.

2. LITERATURE REVIEW

Different issues related to energy security of European Union and its development have been studied by a number of scholars. Scheepers et al. (2007) in their research “EU standards for energy security of supply” studied an instrument to help to the EU and MS to shape and adapt their energy policies with a view to supply security. It could, more in particular, be useful in the context of the Strategic EU Energy Review as proposed by the European Commission in its 2006 Green Paper on EU energy policy (EC, 2006) and as published in January 2007 (EC, 2007).

Matsumoto et al. (2018) applied time-series clustering approaches and three energy security indicators based on the Shannon–Wiener Diversity Index³ (Shannon, 1948). The aim was to enhance understanding of how energy security of EU countries, in terms of energy supply, has evolved. An overall improvement in energy security in most EU countries between 1978 and 2014 was identified, with Denmark and the Czech Republic evidencing the greatest improvements. The main driver of improvement has been the diversification of primary energy sources.

Gracceva and Zeniewski (2014) present a novel framework to assess energy security and used this framework to develop a comprehensive approach to the interactions between climate change policies and energy security. The impact of a low-carbon scenario on one of these five properties (long-term robustness) will be assessed using a complex multi-regional energy system model. The results of their research demonstrate how this scenario induces structural changes along the whole energy supply chain, revealing dynamic vulnerabilities and trade-offs that are not adequately accounted for by existing indicator-based assessments.

¹ https://trade.ec.europa.eu/doclib/docs/2016/november/tradoc_155103.pdf

² <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009L0073>
<https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009L0072>

³ Shannon–Wiener index is an indicator for evaluating diversity.

Haas et al. (2011) attempted to elaborate historically implemented promotion strategies of renewable energy sources and the associated deployment within the European electricity market. Hence, at a first glance, the historic development of renewable energy sources in the electricity (RES-E) sector is addressed on Member State and on sectoral level as well as consequently discussed according to available RES-E potentials and costs.

Talus (2017) in his research illustrates the change in the EU's approach from markets and market mechanisms to increasingly intrusive public sector control. Not only is the public sector deciding what to invest and where, it is now also moving towards deciding which commercial projects should go forward and which should not. Instead of markets being driven by commercial logic, the motivations behind cross-border natural gas projects are often political in nature. This is not in itself uncommon since energy and politics have always been closely connected at global level. However, it conflicts with the EU's policies in this area, which are based on liberal market thinking.

Jonsson et al. (2015) screen and scope out a comprehensive suite of energy security aspects to be considered when assessing low-carbon energy scenarios and apply it using the EU Energy Roadmap as an example. Availability and affordability issues as well as security of demand matters and geopolitical security aspects are identified and discussed. External factors, e.g., future international climate treaties and international relations, are important for some energy security outcomes. A broader framing of energy security together with structured assessments on the security implications of energy transitions would benefit future EU energy policy.

At the same time, issues related to the implementation of the legal regulation of EU energy security in the legislation of Ukraine, in accordance with the Association Agreement between Ukraine and the EU, have not been studied and presented in sufficient detail.

3. LEGAL PROVISION OF ENERGY SECURITY IN THE EU AND ENERGY PACKAGES

For the EU, ensuring energy security is particularly important factor in economic development, and the import dependence on energy resources⁴, poses the challenge of establishing a stable supply of hydrocarbons in sufficient quantity and quality. Although ensuring energy security is the task of each individual EU State, given the presence of State sovereignty (Lipková, 2011), in the context of the unification of European energy markets, certain geopolitical aspects (storage, transit and substitution) complicate the settlement of energy security at the local level and bring it to the superstate level of the EU.

The prototype of the European Union was the union of coal and steel between France, Germany, Italy, Belgium, the Netherlands and Luxembourg from 1952 (European Parliament, 1951), which made it possible to unite these States into an energy and economic European interstate association. The basis of this union was to create conditions for the free production and movement of products of the coal and metallurgical industries, thanks to the implementation of which it was possible to create a stable and solid foundation in such important sectors of the economy as energy and metallurgy (Khalova et al., 2019).

Later, the energy sector only increased its role in the new international institution, so in 1957, as part of the signing of the Treaty of Rome, the Treaty on the Establishment of the European Atomic Energy Community was signed. It regulated the integration of European countries in the field of the peaceful use of nuclear energy, which was seen by all European countries as an important and promising tool for solving the energy problem in Western Europe. Thus, it was planned to relieve the severity of the energy crisis, which primarily affected small Western European countries. However, the most significant event was the adoption by the European Commission of Directive 96/92 (European Parliament, 1996a) and Directive 98/30/EC (European Parliament, 1996b). The first one established the key principles of competition among producers and suppliers of electric power. The main goal of the directive was to ensure 35% of the annual electricity supply in the open market, the separation of electricity monopolies. The other established general rules for transportation, storage, distribution and consumption of natural gas and particular aspects of the organization of the gas market. This marked the beginning of the creation of a single European liberalized electricity and gas markets as well as the reform of the energy sector.

⁴ According to Eurostat data, the share of energy resources imported by the EU is more than 70% EU imports of energy products - recent developments. Statistics Explained – 2019. Online: <https://ec.europa.eu/eurostat/statistics-explained/pdfscache/46126.pdf>

These directives formed the so-called First Energy Package. The EU Energy Package is a comprehensive set of legal acts aimed at responding to global and European climate change and energy challenges and integrating climate change considerations into a range of sectors and policies (Kulovesi and Muñoz, 2011).

The next step was the adoption of the Second Energy Package consisting of electric (2003/54/EC) and gas (2003/55/EC) (European Parliament, 2003c,d) directives that introduced equal access to the electricity and gas networks, development of competition, liberalization of the energy sector, and so on. The main goal was to create conditions for the development of fair competition in the European energy sector. In particular, this package formulated the requirements for the necessity of vertically integrated companies (in practice this meant that, for example, in the natural gas sector the activities of companies transporting gas must be separated from the activities of gas production and distribution). At the same time, this approach did not include "ownership subsidy". The package established two different specific timeframes for liberalization of electricity and gas sales on the retail markets, namely the beginning of 2004 for industrial consumers and the beginning of 2007 for private households (Pavlyuk and Khorolskyi, 2015).

However, scientists note that the implementation of the directives of the Second Energy Package has shown a lack of effectiveness, which was reflected in a high degree of monopolization in the energy sector by most of the EU member States. It was impossible to fulfill the requirement of a complete transfer of energy through the cordons of one EU member State to another. The energy markets of the member States were very weakly integrated, their functioning was not transparent, etc. (Khalova et al., 2018).

It should be noted that upon the adoption of the UN Framework Convention on Climate Change and the Kyoto Protocol, which limited the release of CO₂ into the atmosphere, it should be mentioned. The two Energy Packages did not focus on this issue, which weakened the EU's position in the fight against the release of carbon dioxide. That is why the European Council adopted the so-called "20-20-20" program without regard to certain difficulties in the implementation of the Second Energy Package. It stipulated 20% reduction of carbon dioxide emissions, 20% reduction of energy consumption within the EU and 20% replacement of the existing energy sources with renewable sources (EC, 2009). The Third Energy Package was developed to implement this program. It should be noted that the last one had some promising ideas for the parties, including the possibility of choosing the method of distribution of production, production and transportation, namely a full or partial division of ownership in the form of independent transport operator, and independent system operator (EC, 2011). Therefore, a special feature of the Third Energy Package was the prohibition of companies to sell and transport gas and electricity. At the same time, monopoly companies were asked to sell the transport networks or give their management to an independent operator. In addition, the documents clearly provide for guarantees of third-party access to gas transportation capacity.

The forthcoming energy package, "Clean Energy for All Europeans", was approved by the EU in 2019 and it consists of eight international documents that include requirements for the organization of local and pan-European energy markets. These are documents such as: Renewable Energy Sources Directive updated (EU) 2018/2001; Directive on the Energy Efficiency of Buildings (EU) 2018/844; Energy Efficiency Directive updated (EU) 2018/2002; Regulation on the Management of the Energy Union and Climatic Measures (EU) 2018/1999; Directive on General Rules for the Internal Market of Electricity (EU) 2019/944; Regulation on the Internal Market of Electricity (EU) 2019/943; Regulation on Preparedness for Risks in the Electricity Sector (EU) 2019/941; Regulation on the Establishment of the European Union Agency for Cooperation between Energy Regulators (EU) 2019/942. It is expected that their implementation will help accelerate and facilitate the EU's transition to renewable energy sources.

Formation of this package of legislative initiatives is one of the stages of implementation of the Strategy for the Creation of the Energy Union. The aim of the 4th Energy Package "Clean Energy for All Europeans" is to facilitate the transition from wasteful fuel to more environmentally friendly energy and fulfill the obligations of the EU Paris Agreement on Reducing Greenhouse Gas Emissions. The amendments proposed in the legislation will bring significant benefits to national economies, contribute to achieving carbon neutrality and strengthen the position of consumers.

Therefore, we can conclude that the development of legal security of the energy sphere in the EU has been taking place progressively over 70 years and has passed quite a significant period, from a purely economic goal in providing itself with energy resources to ensuring energy security. Energy Directives

that make up the energy packages allowed to maximize the level of energy security, ensured the development of competition among producers and suppliers of energy resources, provided equal access to energy and gas and water supply networks, liberalize the energy sector, introduce diversification of energy resources and their suppliers, increase the use of green energy, reduce the level of emissions into the atmosphere, improve energy efficiency, enhance the role of the consumer and energy security in general.

4. IMPLEMENTATION OF ENERGY PACKAGES IN THE UKRAINIAN LEGISLATION

Ukraine became a full member of the Energy Partnership on February 1, 2011 and has undertaken the obligation to implement into the national legislation the main acts of the EU energy legislation (Parliament of Ukraine, 2010). Ukraine's accession to the Energy Partnership offered opportunities and instruments for structural reforms in the energy sector. Implementation of European norms and standards - the *Acquis Communautaire* ("road map" - the main assets of the EU energy legislation) in the energy sector as well as in the environmental protection sector allows our state to progressively implement economic restructuring and follow the path of sustainable development.

The process of implementation of energy packages in Ukraine is at its beginning. Over the past few years, we can observe an active desire of Ukraine to cooperate with the European Union also in the issues of energy security, but this (process) takes place within the economic and political sphere. Adaptation of the legal regulation of the investigated tsarina today is done fragmented, unsystematically, which as a result, in many ways undermined their overall goal. This assertion is confirmed by a number of regulatory acts adopted by the Ukrainian Parliament aiming at reforming the energy sector. Thus, the adoption of the Law of Ukraine "On the Natural Gas Market" (2015) (Parliament of Ukraine, 2015a) declared implementation of the requirements of the EU Third Energy Package (Directive 2009/73/EC "On Compliance with the Internal Market of Natural Gas" and EU Regulation 715/2009 "On the Conditions of Access to the Natural Gas Transport") within the limits of the agreement signed by Ukraine on establishment of the Energy Partnership and envisages pursuit of liberalization and reform of the natural gas market and elimination of the single large-scale player of recent years, NAK Naftogaz of Ukraine PJSC, which produced oil and gas, their processing, transportation and storage, etc. on a single basis. The said law introduced the creation of a new model of the natural gas market aimed at ensuring fair competition and effective protection of rights and interests of all gas market participants, regardless of the form of ownership. However, to date, we cannot say that its provisions have been fully implemented, because now, except for the above monopoly companies in tenders for production, processing and other manipulations with energy resources, participate its affiliated companies and partners such as Ukrtransgas PJSC, Ukgazvydobuvannya PJSC. Therefore, the expected result in the form of demonopolization was not achieved.

Within the framework of the Third Energy Package of the EU, the Ukrainian Parliament adopted the Law "On Electricity Market" (2017) (Parliament of Ukraine, 2017), which from 2019 introduced the possibility of selecting a supplier of energy services, competition and reduced prices for the buyer of electricity. However, the implementation of this law is hindered by general and subjective reasons, which include the regulatory irregularity of the implementation of parallel markets, generating capacities and the problem of accumulation of charges, detailed regulatory and technical infrastructure. Considering these and other reasons, the Representation of the European Union and the European Bank for Reconstruction and Development recommended to suspend the implementation of the new market of electric power in Ukraine (Parliament of Ukraine, 2019).

Moreover, the New Energy Strategy of Ukraine for the period up to 2035 "Security, Energy Efficiency, Competitiveness" of June 18, 2017, was developed in accordance with the above-mentioned laws, which is based on the principles of strengthening the development of renewed energy, in particular, increasing the use of "green energy", i.e. promoting the use of a green tariff on the part of the population and enterprises. With the purpose of stimulating the development of renewable energy, the Law of Ukraine "On Amendments to Some Laws of Ukraine on Ensuring Competitive Conditions for Production of Electricity from Alternative Energy Sources" was passed. "The "green" tariff is linked to the euro exchange rate; the "green" tariff for electricity from biomass and biogas was reduced by 10%; the requirements for local storage were lowered by 5% and 10% for the use of equipment of Ukrainian production at the level of 30% and 50%; introduction of "green" tariff for geothermal power plants, for

solar and hydroelectric power plants of private households up to 30 kW of capacity (Parliament of Ukraine, 2015b).

Moreover, as of June 1, 2019, the Law of Ukraine "On Amendments to the Tax Code of Ukraine and Certain Other Legislative Acts of Ukraine" entered into force. The Law of Ukraine "On Amendments to the Tax Code of Ukraine and Certain Other Legislative Acts of Ukraine for Improvement of Administration and Review of Rates of Certain Taxes and Levies" took legal effect on December 1, 2019, which contains the main provisions intended to contribute to the development of the renewed energy sector. The following contexts are worth mentioning:

- the Tax Code of Ukraine stipulates that up to March 31, 2022 operations with import to the customs territory of Ukraine of the following goods shall be exempt from taxation for value added tax: combined cycle power plants, photovoltaic panels, inverters and transformers of suitable capacities (Parliament of Ukraine, 2011a);

- the Law of Ukraine "On Energy Land and the Legal Regime of Special Zones of Energy Facilities" contains a provision according to which industry, transport, communications, energy, defense and other purposes can be developed on the land by alternative energy facilities that use renewable energy sources regardless of the purpose of such land plots (Parliament of Ukraine, 2011b). All these measures have caused a rapid growth of green energy, which led to the re-production of energy in general. In view of the fact that the State as a whole is not the only one, the State in the person of the state company, "Guaranteed Buyer", is forced to buy green energy in full volume at the fixed "green" tariff, which is one of the highest in Europe today (Drapak, 2018).

Most producers of solar energy receive, according to the law, 4.25 hryvnia (UAH) per kilowatt, when they produce hydrogen energy at 3-3.5 hryvnia (UAH). This is significantly more than the "thermal" (1.20 hryvnia per kW) and "nuclear" (0.67 hryvnia per kW). The consumers pay (without taking into account taxes and charges) only 0.25 hryvnia per kilowatt and industrial enterprises pay 1.25 hryvnias per kW. For a long time, it was possible to keep low tariffs for the population at the expense of the sale of nuclear energy to industrial enterprises. However, due to the rapid development of renewable energy this system ceased to work - the money for subsidies catastrophically lacks. The State enterprise, "Guaranteed Buyer", is a *de facto* bankrupt (Thaize, 2020) and, by the end of January 2021, the company had already collected over 25 billion hryvnias (UAH) from the "green" sector (Finbalance, 2021). Thus, we can conclude that the transition to green energy has been very rapid, which is affecting the State budget of Ukraine in the conditions of permanent economic instability. There is a situation when the rapid transition to alternative and renewable sources of energy is available only to economically developed countries. The functioning of large power plants from renewable energy sources is characterized by sharply changed modes of operation in the structure of the United Energy System of Ukraine. This leads to additional costs for the dispatching of power plants and maintenance of reserve capacities to regulate the operation of wind and solar power plants.

We should also pay attention to the absence of an important State policy of deregulation in the energy sphere, i.e. reduction of the State influence on the energy sector of Ukraine. Thus, the adoption of the Law of Ukraine "On the National Commission, which carries out state regulation in the fields of energy and public services" (2016) (Parliament of Ukraine, 2016) meant the continuation of the course on State management of the energy sector, which, in our opinion, does not correlate with European standards. The declared aim of adoption of the mentioned act is elimination of monopolies and State regulation of activities of the Ukrainian energy market participants. But, obviously, in the opinion of the lawmakers the State should manage the energy sector without any intermediaries. The law determines the legal status of the State regulator in the field of energy and communal services, which performs regulation, monitoring and control over the activities of State actors in the field of energy and communal services. Thus, the State, using an imperative influence, regulates the energy sector by creating the same conditions for all entities of the energy sphere and reducing the impact on price formation. In our opinion, the State should create transparent conditions and the same rules for all players in the energy market, thus reducing its own influence on the market of energy resources.

Recently, the Law "On Energy Efficiency" was adopted, which is an important step towards the implementation of the third energy package, namely the European Union Directive 2012/27/EC "On Energy Efficiency". The law stipulates that the emergence of national and local plans for energy efficiency. In addition, the monitoring of implementation of the National Plan will be introduced, and all who are willing will have access to the official results of this monitoring. Establishment of an energy

management system in cities and State authorities, i.e. special units and specialists to perform energy monitoring of buildings, detection and solution of energy efficiency problems, etc., purchase and lease at public expense of only energy efficient equipment and premises, require modernization of equipment and measures by energy supplying companies, and create an open online platform on energy efficiency. The law also establishes how much energy consumption is to be reduced in the short term.

The law stipulates a focus on medium- and long-term planning of energy efficiency measures. Thus, the Ministry of Development of Communities and Territories of Ukraine has to develop a long-term strategy for thermal modernization of buildings, which can positively affect not only the preservation of costs, which are lost for a long time together with the lost heat, but also to improve the condition of the natural environment.

However, this law potentially has a number of shortcomings. A number of provisions of the law are declarative in nature, it is necessary to adopt a large number (nearly 50) of secondary legislation and regulations concerning strategies, national action plans, municipal energy plans, and reports on the potential of energy efficiency of energy supplying companies over a one-year period, without which the law will remain a declaration of positive intentions. The responsibility for the issues of energy efficiency, in general, and energy efficiency between the Ministry of Energy and the Ministry for Communities and Territories Development of Ukraine are rather abstractly divided, which will not contribute to achieving the goal of improving energy efficiency. Moreover, implementation of provisions of the law requires obtaining funds, in particular, for creation of the energy management system, implementation of energy plans of cities, energy audits, etc.

5. CONCLUSIONS

Development of legal security of the energy sphere in the EU has been taking place steadily for 70 years and has passed quite a significant period, from ensuring economic goals of self-sufficiency in energy resources to ensuring energy and environmental security. Adoption of energy packages allowed to avoid monopolization of the energy sector, ensured competition among producers and suppliers of energy resources, ensured equal access to energy and gas supply networks, strengthened the role of the consumer of energy resources, liberalized the energy sector, diversified energy resources, increased the share of green energy, reduced carbon dioxide emissions into the atmosphere, and increased energy efficiency and energy security in general.

However, the implementation of EU energy directives in Ukraine is taking place in a fragmented manner, unsystematically, without clear economic estimates and the expected result disregarding their overall goal of ensuring energy security of Ukraine. Thus, adoption of the Law of Ukraine "On the Natural Gas Market" for implementation of Directive 2009/73/EC "On Compliance with the Internal Market of Natural Gas" and EU Regulation 715/2009 "On the Conditions of Access to the Natural Gas Transportation System" in fact did not contribute to de-monopolization in the gas sphere. After the adoption of the Law of Ukraine "On the Electricity Market" the regulatory irregularity of the implementation of parallel markets, generating capacities and the problem of accumulation of charges, detailed regulatory and technical infrastructure remained. The sharp transition to green energy and its extremely high price, under the conditions of permanent economic crisis, causes excessive pressure on the State budget of Ukraine. Under such conditions, the functioning of large power plants from renewed sources of energy is characterized by sharply changed modes of operation in the structure of the unified energy system of Ukraine. The recently adopted Law of Ukraine "On Energy Efficiency" stipulates the national and regional systems of energy management and energy efficiency important for the State's energy security. However, without adequate funding and training of a sufficient number of specialists in energy efficiency, it runs the risk of being solely declarative.

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AUTHORS' DECLARATIONS AND ESSENTIAL ETHICAL COMPLIANCES*Authors' Contributions (in accordance with ICMJE criteria for authorship)*

Contribution	Author 1	Author 2	Author 3	Author 4
Conceived and designed the research or analysis	Yes	Yes	Yes	No
Collected the data	Yes	Yes	Yes	Yes
Contributed to data analysis & interpretation	Yes	No	Yes	Yes
Wrote the article/paper	Yes	Yes	Yes	Yes
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